THE IMPACT OF AGRICULTURE ON NEW HAMPSHIRE'S ECONOMY

In Fiscal Year 2002

Introduction

Defining the agricultural industry is not an easy task, although one would imagine that it ought to be. The most important reason for this is that most people who farm are self-employed, and therefore are not registered with the New Hampshire Department of Employment Security, the state government's primary collector of employment and other economic statistics. The U. S. Census Bureau also does not collect detailed information on farming, but instead relies on surveys conducted by the U.S. Department of Agriculture.

The U.S. Department of Agriculture provides detailed, but consolidated, information to the New Hampshire Department of Agriculture about farming activities in the state that is far more useful for this analysis than what is published by the U. S. Census Bureau, an important source of information for other industries. Finally, the U. S. Bureau of Economic Analysis is a very important source of information for the following analysis. The primary reason for this is that this agency has access to the U. S. Internal Revenue Service's Schedule C (self-employment) data base, and thus can calculate the total number of people employed and their earnings for both self-employed and employed workers for all of the various industries. Therefore, the two most important sources of information used in the following analysis are from the New Hampshire Department of Agriculture and the U. S. Bureau of Economic Analysis. Most of the information available from these sources is available through December 2001, with some data through December 2002. Thus, some of the following information has been estimated, to produce a report which covers the period of July 2001 to June 2002.

The final problem in writing this report is to further define agriculture and agricultural activities. The government's rule to classify business establishments is by the activity which provides the largest source of income to that business. For example, Christmas tree farming is really a forestry activity, unless it is only a minor part of a farm's total sales, in which case it would be included under agriculture. Otherwise, it would appear under forestry. Another example is that a large part of the horticulture business is the installation of landscaping materials around new or renovated buildings. Such a horticulture business would be classified under construction, rather than under agriculture.

The New Hampshire Department of Agriculture has recently reported $565 million in agricultural sales, including $380 million in horticultural products. In addition, it noted that there were an additional $125 million in dairy and specialty food products manufacturing in the state.

Since the release of this information by the state Department of Agriculture, the New England Nursery Association, Inc. has reported that horticultural sales for New Hampshire has increased from $380 million in 2001 to $438 million in 2002. This revision would increase total agricultural sales to $623 million, using the state Department of Agriculture's approach to measuring this industry, plus the $125 million in sales of food products manufacturers.

In the following analysis, this researcher has made some revisions to these data, to both bring them up to estimated levels for the fiscal year 2002 period and to avoid double counting. As a result, the agricultural industry sector is defined as having $310 million in sales, including $120 million in horticultural sales. There is an additional $295 in horticultural sales that have been estimated, with $50 million allocated to retail trade and $245 million to construction. This is a total of $605 million, below the level of $623 given above. The difference of $18 million is largely due to sales of horticultural products from farms to retailers and contractors for resale.

The following analysis also includes a summary of the multiplier impacts of these $605 million in sales of farm and horticultural products. The multiplier impacts will include within them this $18 million in sales from farms to resale by non-farm horticultural businesses. The multiplier impacts will also include a share of the $125 million in dairy and specialty food products manufacturers listed by the state Department of Agriculture as part of the state's agricultural industry. The share of those manufacturing industries not included in the multiplier impacts are for the share of the milk, fruit and vegetable products that are imported into the state from farms located elsewhere.

The economic model used in the following analysis to measure sales and employment impacts of agriculture and horticulture on the state's economy is an updated 2002 model prepared for the Institute for New Hampshire Studies (INHS) by Laurence Goss, Ph.D. This model is based on data primarily from the U.S. Bureau of Economic Analysis (BEA) and is very similar to its RIMS II model of the state's economy, but with more consolidation of industry sectors. Unlike the INHS model used previously for economic studies for the New Hampshire Department of Resources and Economic Development, agriculture was broken out as a separate sector from the construction, mining and forestry consolidated sector. In addition to measuring the multiplier impacts, this model can also be used to calculate state and local government tax revenues. This model uses the new North American Industrial Classification System (NAICS), which has replaced the Standard Industrial Classification (SIC) system. After reviewing the economic impacts of agricultural production and other horticultural sales, this report will also look at the impacts of agriculture-related tourism.

The Impact of Agricultural Production

The total sales of farms used in the fiscal year 2002 period was estimated to be $310 million. This included $120 in horticultural sales that were primarily crop production for resale to other businesses. Agricultural, or farm, sales include farmers markets, farm stands, sales to manufacturers and sales to other farmers. On-farm manufactured food products, such as jams and jellies, were also included as sales. This $310 million was equal to 0.7 percent of the estimated Gross State Product for New Hampshire for the fiscal year 2002 period.

The U. S. Bureau of Economic Analysis reported that there were 8,559 people engaged in farming on a full or part-time basis, including self-employed people during 2001. This number also included contractors of agricultural services who worked on the farms, including planters and harvesters, but who were not actual employees of the farms. As most work on farms is both seasonal and part-time, the full time equivalent employment for fiscal year 2002

was estimated to be 4,828 people. This was 0.7 percent of the state's full time equivalent work force. If part-timers both within this industry and the state's total employment are measured, then agricultural production provided 1.1 percent of all part-time and full time jobs.

This employment provided an estimated $43 million in wages, salaries and self-employment earnings. This was 0.2 percent of all such earnings for the state, and reflects the part-time and seasonal nature of this work, as well as the relatively low hourly wage rates provided. Out of the $310 million in sales, there were also six million dollars paid in taxes, primarily in the form of property taxes to local government.

The economic model was used to calculate the multiplier (both indirect and induced) impact of the $310 million in direct agricultural sales on the rest of the state's economy. Indirect impacts are those impacts on supplier businesses and organizations, plus taxes paid to governments located within the state's borders. Induced impacts are those due to the spending by households to purchase the products of the industry as well as the spending of the wages and other earnings of the employees of that industry. An additional $415 million was added to the state's economy from the original sales of $310 million by the agricultural sector. This resulted in an additional 2,414 full time equivalent jobs and an addition to household income of $70 million. State and local governments received an added $15.6 million in tax receipts.

Therefore the total impact of this agricultural sector was $725 million in total transactions, equal to 1.7 percent of Gross State Product. There was total employment of 7,242 full time equivalent jobs, or 1.0 percent of the state's full time equivalent jobs. There were $113 million in total household earned income, which was 0.4 percent of all earned income. Finally, there were $21.6 million in local and state tax receipts. Of this amount, it was estimated that local property taxes equaled $14.5 million and state tax receipts equaled $6.9 million, including rooms and meals taxes of $0.2 million. Thus, the primary source of revenues to state government was due to the multiplier effect.

The Impact of Other Horticultural Sales

There were an additional estimated $295 million in horticultural sales not included in the previous section. The New England Nursery Association, Inc. has contracted with faculty at the Universities of Vermont and Maine to conduct annual surveys of this industry across New England. Its most recent study, for calendar year 2002, stated that horticultural businesses located in New Hampshire had $438 million in sales. The horticultural industry includes farms and greenhouses where crops (including bushes, trees, flowers, and sod) are grown for sale. It also includes businesses which purchase and resell such products (except for florists who sell primarily cut flowers) as well as businesses which install and maintain such products. Many nurseries fall into the category of retail or wholesale trade as they are often reselling products raised at another location. There are also many other horticultural businesses which are in construction, tree services or landscape maintenance. In the following analysis, it was assumed that $50 million was in the form of retail trade or direct sales to households, and the retail sector of the economic model was used to measure the impacts of these sales. The other $245 million in sales was in the form of wholesale trade (usually sales to construction), construction and landscape management services. For the purposes of using the economic model, the construction, forestry and mining consolidated economic sector was used to measure employment, household earnings, taxes and the multiplier impacts of this $245 million. The $295 million in sales was equal to 0.7 percent of Gross State Product for state fiscal year 2002.

These $295 million in sales resulted in an estimated 268 full time equivalent jobs in retail trade and 1,871 jobs in construction, for a total of 2,139 jobs. This was equal to 0.3 percent of all full time equivalent jobs. Given that these jobs are highly season in nature, there were probably twice this number of jobs during the summer season. Household earnings were estimated at $7.1 million for retail trade and $46.4 million for construction, for a total of $53.5 million in household earnings. This was 0.2 percent of all earned household income. This low percentage reflects the fact that these jobs are usually seasonal, often part-time and pay relatively low hourly wages. Tax receipts from these two sectors were estimated as $7.25 million, of which $5.9 million was estimated to be for local property taxes and $1.35 million in state taxes.

The multiplier effect of the $295 million in horticultural sales was an additional $457.3 million in indirect and induced transactions, for a total monetary impact of $752.3 million. This was equal to 1.7 percent of the Gross State Product. There was an addition of 1,936 full time equivalent employees, for a total of 4,075 full time equivalent employees, or 0.6 percent of all full time equivalent jobs in the state. Household earned income increased by $122 million, to total earned income of $175.5 million. This was equal to 0.7 percent of all earned income.

Finally, there were an additional $19.3 million paid in state and local taxes due to the indirect and induced multiplier effect. Of this amount, $9.1 million was in local property taxes and $10.2 million in state tax receipts, including $0.2 million in rooms and meals taxes. The total taxes paid that resulted from the original $295 in direct spending, plus the indirect and induced effects were $26.55 million, of which $15 million was in local property taxes and $11.55 million in state tax receipts, including $0.2 million in rooms and meals taxes. As was the case for the agricultural sector impacts described above, most state government revenues resulted from the indirect and induced rounds of spending, rather than from the original direct spending.

Total Impacts of Agricultural and Other Horticultural Sales

The total direct sales of agriculture and other horticultural products and services were estimated to be $605 million for fiscal year 2002. This was 1.4 percent of Gross State Product. The total full time equivalent employment was estimated as 6,967 jobs, or one percent of the state's number of full time equivalent jobs. During the summer, there were probably at least twice this number of people involved in agriculture, including horticulture, or over two percent of summer employment. The total household earned income from this employment was estimated at $96.5 million, or 0.4 percent of the state's total household earned income. The direct taxes paid by these businesses to state and local government within New Hampshire included $11.9 million to local government and $1.35 million to state government.

When the indirect and induced impacts are added to the direct impacts outlined in the preceding paragraph, there were $1,477.3 million in total monetary transactions. This was equal to 3.4 percent of Gross State Product. These monetary transactions resulted in 11,317 full time equivalent jobs, which was 1.6 percent of such jobs in the state. Total household earned income was $288.5 million from the direct, indirect and induced impacts, which was 1.1 percent of all household earned income. Finally, the total taxes paid to state and local governments equaled $48.15 million, of which $29.7 million was in local property taxes and $18.45 million was in state tax receipts, including $0.4 million in rooms and meals taxes. Thus, the state government received most of its taxes through the indirect and induced effect. The major sources of state taxes were the business profits and/or business enterprise tax.

Introduction to Agritourism

The following sections describe those aspects of tourism that depend directly or indirectly on the activities of the state's agricultural industry. The sales of agricultural products to tourists have not been included in the sections below, as they have already been incorporated into the calculations of the previous sections. The first section describes the economic impact of the state's eleven agricultural fairs. The state Department of Agriculture plays an active role in these fairs, as do many of the state's farmers. The second section describes what can be defined as true agricultural tourism, which is when tourists visit farms and/or make purchases of farm products and locally processed food products at farmers markets, roadside stands and at retail stores. The third section describes the economic impact of tourists who intentionally drive through agricultural areas to view the scenery, but are not making any purchases of farm products. A fourth section summarizes these tourism impacts that are related to agriculture.

Agricultural Fairs Impact

During the fall of 2002 the Institute for New Hampshire Studies prepared an economic impact study of the eleven agricultural fairs held in the state during the summer and fall of 2002 for the New Hampshire Association of Fairs and Expositions. The results that follow differ from the report prepared for the association in two ways. First, $530,000 in spending for agricultural products and by farm exhibitors at these fairs were not included in the following analysis as they were already accounted for in previous sections of this report. Second, a new economic model for state fiscal year 2002 was prepared for use in this report, while the report prepared for the Fairs and Expositions association used the fiscal year 2000 model.

The report prepared for the Fairs and Expositions association found that visitors to the fairs and the fair exhibitors and operators spent an estimated $40,591,550 at, or near, the fair grounds while these fairs were underway. In the following analysis this has been reduced to an estimated $40.1 million. This spending resulted in household incomes of $13.4 million and 618 full time equivalent jobs, not including the farmers. The direct spending produced $2.4 million in state and local government revenues, including $0.6 million in local property taxes, $1.4 million in rooms and meals taxes and $0.4 million in other state government revenues.

The indirect and induced impacts of the $40.1 million in direct spending was an additional $66.4 million in monetary transfers, including $25.0 million in household revenues and $4.0 million in state and local government revenues. An additional 296 full time equivalent jobs were also created.

The total impact of the agricultural fairs (not including purchases of farm products and spending by farmers) was $106.4 million in transactions, 914 full time equivalent jobs, $39.4 million in household income and $6.4 million in state and local government receipts. The government receipts include $1.4 million in local property taxes, $1.5 million in rooms and meals taxes, and $3.5 million in other state government taxes, fees, liquor store sales, State Parks receipts and tolls.

Agricultural Tourism Impact

During the summer of 2002 the Institute for New Hampshire Studies prepared an economic impact study of agricultural tourism for the state Department of Agriculture for fiscal year 2002. The results that follow differ from the previous report prepared for the Department of Agriculture in two ways. First, $26 million in spending for agricultural products by tourists and households was not included in the following analysis as they are accounted for in previous sections of this report. Second, a new economic model for state fiscal year 2002 was prepared for use in this report, while the report prepared previously used the fiscal year 2000 model.

The previous report prepared for the state Department of Agriculture estimated that agricultural tourists spent an estimated $201 million (including $26 million for farm products) while on an estimated 520,000 trips. The $175 million in direct spending by these agricultural tourists not spent on farm products resulted in 2,556 full time equivalent jobs and household incomes of $59.2 million. This direct spending produced $19.2 million in state and local government revenues, including $3.1 million in local property taxes, $6.4 million in rooms and meals taxes and $9.7 million in other state government revenues.

The indirect and induced impacts of the $175 million in direct spending were an additional $290 million in monetary transfers, including $110.5 million in household revenues and $22.4 million in state and local government revenues. An additional 1,287 full time equivalent jobs were also created. The total impact of this agricultural tourism (not including the purchase of farm products) was $466 million in transactions, 3,843 full time equivalent jobs, $169.7 million in household income and $41.6 million in state and local government receipts. Government receipts included $8.9 million in local property taxes, $6.6 million in rooms and meals taxes, and $26.1 million in other state government taxes, fees, liquor store sales, State Park receipts and tolls.

Agricultural Scenery Tourism Impact

One of the most common forms of recreational travel is the scenic drive. The Travel Industry Association of America (TIAA) conducted the most recent visitor surveys of the state's tourists and travelers during 2001 as part of its national panel research. The state Division of Travel and Tourism Development purchased these survey results from TIAA and they are summarized on the INHS website. These survey results showed that about forty percent of all tourists and business travelers in the state were engaged in outdoor recreation, a rate that was twice the national average. When those engaged exclusively in active outdoor recreation were excluded, then about thirty percent of all visitors to the state were engaged in passive outdoor recreation, including scenic drives. If one assumes that twenty percent of all passive outdoor recreation includes scenic drives through agricultural areas in this state, then six percent of all visitors annually engaged in this activity. The seasonal TIAA visitor surveys showed that most passive outdoor recreation occurred during the summer, followed closely by the fall and then the spring. Very few visitors engaged in passive outdoor recreation during the winter.

The Institute for New Hampshire Studies (INHS) estimates that there were 26.8 million trips of individual tourists and business travelers during state fiscal year 2002. Thus, there were an estimated 1.6 million trips by individuals where viewing agricultural scenery was an important trip activity. When the 520,000 trips to purchase agricultural products as described in the previous section were excluded, then there were 1.08 million trips by individuals to view agricultural scenery, with no purchase of agricultural products. It has been assumed that a larger share than normal of agricultural scenery trips were only one day long. As a result, it has been assumed that only three percent of all "visitor days" spent in the state included the viewing of agricultural scenery, with no purchase of farm products. This helped to provide for a conservative assumption regarding the economic impact of such trips. The INHS estimates that there were 54 million visitor days in the state during state fiscal year 2002. Three percent of this total was 1.6 million visitor days, which in turn resulted in total estimated direct spending of $109 million, as the typical visitor spent $67.26 per day in the state.

The $109 million in direct spending by these agricultural scenery tourists resulted in 1,465 full time equivalent jobs and household incomes of $33.9 million. This direct spending produced $8.9 million in state and local government revenues, including $2.0 million in local property taxes, $3.7 million in rooms and meals taxes and $3.2 million in other state government revenues.

The indirect and induced impacts of the $109 million in direct spending was an additional $173.4 million in monetary transfers, including $64.3 million in household revenues and $13.3 million in state and local government revenues. An additional 787 full time equivalent jobs were also created. The total impact of this agricultural scenery tourism was $282.4 million in transactions, 2,252 full time equivalent jobs, $98.2 million in household income and $22.2 million in state and local government receipts. Government receipts included $5.2 million in local property taxes, $3.8 million in rooms and meals taxes, and $13.2 million in other state government taxes, fees, liquor store sales, State Park receipts and tolls.

Total Agritourism Impacts

The $324.1 million in direct spending by these agriculture-related tourists was 0.7 percent of Gross State Product and 8.7 percent of all tourist and business traveler estimated spending in New Hampshire during state fiscal year 2002. This spending resulted in 4,639 full time equivalent jobs, which was 0.7 percent of all full time employment in the state. This direct spending resulted in household incomes of $106.5 million. This direct spending also produced $30.5 million in state and local government revenues, including $5.7 million in local property taxes, $11.5 million in rooms and meals taxes and $13.3 million in other state government revenues.

The indirect and induced impacts of the $324.1 million in direct spending was an additional $529.8 million in monetary transfers, including $199.8 million in household revenues and $39.7 million in state and local government revenues. An additional 2,370 full time equivalent jobs were also created.

The total impact of this agricultural-related tourism was $853.9 million in transactions, or 2.0 percent of gross state product. A total of 7,009 full time equivalent jobs were created, or 1.0 percent of all of the state's full time equivalent jobs. There was $306.3 million in household income, which was 1.2 percent of the state's household earned income. The total of $70.2 million in state and local government receipts included $15.5 million in local property taxes, $11.9 million in rooms and meals taxes, and $14.7 million in other state government taxes, fees, liquor store sales, State Park receipts and tolls.

Summary of All Economic Impacts

The $929.1 million in direct spending by agriculture, horticulture and agriculture-related tourists was 2.1 percent of Gross State Product. This spending resulted in 11,606 full time equivalent jobs, which was 1.7 percent of all full time employment in the state. This direct spending resulted in household incomes of $203 million, which was 0.8 percent of the state's household earned income. This direct spending produced $43.8 million in state and local government revenues, including $17.6 million in local property taxes, $11.5 million in rooms and meals taxes and $14.7 million in other state government revenues.

The indirect and induced impacts of the $929.1 million in direct spending was an additional $1,186.4 million in monetary transfers, including $391.8 million in household revenues and $74.6 million in state and local government revenues. An additional 6,720 full time equivalent jobs were also created.

The total impact of this agriculture, horticulture and agriculture-related tourism was $2,321.2 million in transactions, or 5.4 percent of Gross State Product. A total of 18,326 full time equivalent jobs were created, or 2.6 percent of all of the state's full time equivalent jobs. There was a total of $594.8 million in household income, which was 2.3 percent of the state's household earned income. The total of $118.4 million in state and local government receipts included $45.2 million in local property taxes, $12.3 million in rooms and meals taxes, and $60.9 million in other state government taxes, fees, liquor store sales, State Park receipts and tolls.

References

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Institute for New Hampshire Studies, Plymouth State College. Economic Impact of the 2002 Agricultural Fairs on New Hampshire. Plymouth, NH. December, 2002. This report estimated the impact of visitors to the state's eleven agricultural fairs during the summer and fall of 2002.

New England Nursery Association, Inc. $4 Billion and Growing. South Natick, MA. January, 2003. This publication was prepared by faculty at the Universities of Vermont and Maine and summarizes 2002 horticultural sales for the six New England States.

Porter, John C. *Agriculture is Big Business in New Hampshire.* Laconia Citizen. February 4, 2003, page 1. John Porter's article summarizes agricultural statistics for the state compiled by the New Hampshire Department of Agriculture. Mr. Porter is employed by the UNH Cooperative Extension Service.

http://oz.plymouth.edu/~mokrant. This is the Institute for New Hampshire Studies website and contains a wide range of statistics and reports about tourism in New Hampshire.

www.bea.doc.gov. This is the U.S. Bureau of Economic Analysis website. It contains a wide variety of economic information about the nation, the states, counties and metropolitan areas, including Gross State Product. It also provides access to articles and statistics in the monthly Survey of Current Business.

www.state.nh.us/agric/aghome. This is the home page of the New Hampshire Department of Agriculture. It provides access to agricultural statistics for the state as well as information on agricultural tourism and other subjects.

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